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Broad Versus Narrow Traits: Conscientiousness and Honesty–Humility as Predictors of Academic Criteria

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Abstract: Recent research has suggested that the six-dimensional personality model, and especially the dimension Honesty–Humility/Integrity, adds incremental validity to the prediction of important criteria. We expected both this dimension and the dimension Conscientiousness to explain incremental variance in two academic criteria, namely grade point average (GPA) and counterproductive academic behaviour (CAB). In addition, we expected the more specific, so-called narrow traits of Conscientiousness and Honesty–Humility/Integrity to be stronger predictors of academic criteria than the broad traits. To test these expectations, two studies were conducted using the HEXACO Personality Inventory Revised (HEXACO-PI-R) and the Multicultural Personality Test—Big Six (MPT-BS). The results confirmed our expectations and suggest that academic criteria may be predicted with greater accuracy by focusing on the narrow traits of Conscientiousness and Honesty–Humility/Integrity. Copyright © 2010 John Wiley & Sons, Ltd.

Key words: Conscientiousness; Honesty–Humility; Integrity; bandwidth-fidelity; grade point average; counterproductive academic behaviour

INTRODUCTION

In educational contexts, a lot of attention has been devoted to identifying factors predictive of study success. Several studies have found that personality factors explain variance in academic performance over and above the variance explained by cognitive ability (Conard, 2006; Furnham & Monsen, 2009; Goff & Ackerman, 1992; Noftle & Robins, 2007; Poropat, 2009; Ziegler, Danay, Schölmerich, & Bühner, 2010). Whereas cognitive ability indicates how someone *can* perform (maximal performance), the added value of personality in predicting academic performance may lie in its focus on how someone actually *will* perform (typical performance; Furnham & Chamorro-Premuzic, 2004; Goff & Ackerman, 1992; O'Connor & Paunonen, 2007).

Among the Big Five personality dimensions, it has been supported that especially Conscientiousness explains significant variance in academic performance (e.g. O'Connor & Paunonen, 2007). Recently, a new personality model has been introduced which contains an additional sixth dimension, namely Honesty–Humility (Ashton & Lee, 2007; Lee & Ashton, 2008). Although Honesty–Humility has been shown to add incremental validity to important criteria (e.g. Ashton & Lee, 2008; Lee, Ogunfowora, & Ashton, 2005), no studies to date have been conducted to test whether Honesty–Humility will also add incremental validity to the prediction of *academic* criteria. Additionally, whereas most empirical studies focus on the predictive power of the broad personality traits, some scholars have begun to examine the predictive power of the more specific, so-called narrow personality traits for academic criteria (e.g. Chamorro-Premuzic & Furnham, 2003b). The underlying assumption is that focusing on narrow traits will allow for more accurate predictions.

The purpose of the current study is (1) to investigate the relations between Conscientiousness and Honesty–Humility on the one hand and two academic criteria (i.e. grade point average (GPA) and counterproductive academic behaviour (CAB)) on the other and (2) to compare the validity of the narrow traits of Conscientiousness and Honesty–Humility to the validity of the broad traits in the prediction of both academic criteria.

Broad personality traits and academic criteria

Recently, the Five Factor Model (FFM) or 'Big Five' model, which distinguishes between five higher order personality dimensions, has become contested. Analyses based on the same psycholexical studies which previously had revealed five dimensions, have shown that instead of five, six cross-culturally corresponding personality dimensions may be identified (Ashton & Lee, 2007; Ashton et al., 2004; Lee & Ashton, 2008). These six dimensions are known by the acronym 'HEXACO', which stands for Honesty–Humility (H), Emotionality (E), eXtraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O). Compared to the Big Five model, the most

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important change in the HEXACO model is the addition of a new personality dimension: Honesty–Humility. This dimension is defined by honesty, sincerity, fairness, modesty, and lack of greed (Lee & Ashton, 2004). The addition of Honesty–Humility seems to be an improvement, because Honesty–Humility has been shown to explain variance in important criteria and behaviours that is insufficiently captured by scales from existing Big Five measures. For example, because of Honesty–Humility, the HEXACO model has been found to better predict anti-social behaviours directed at organizations (Lee, Ashton, & Shin, 2005), workplace delinquency (Lee, Ashton, & De Vries, 2005), and Sensation Seeking and Egoism (De Vries, De Vries, De Hoogh, & Feij, 2009; De Vries, De Vries, & Feij, 2009; Lee, Ogunfowora, et al., 2005) than has the Big Five model. The second most important change in the HEXACO model is a rotation of the dimensions Emotional Stability and Agreeableness. In the HEXACO model, Agreeableness includes traits associated with irritability and temperament, whereas in the Big Five model these traits are components of Emotional Stability. Likewise, characteristics associated with sentimentality and sensitivity, which in the Big Five model are allocated to Agreeableness, are components of Emotionality in the HEXACO model.

A number of previous studies have demonstrated that of the personality dimensions, Conscientiousness is the strongest predictor of academic performance (e.g. Chamorro-Premuzic & Furnham, 2003a, b; Conard, 2006; Noftle & Robins, 2007; Richardson & Abraham, 2009). A recent meta-analysis has confirmed that Conscientiousness is consistently and positively correlated with academic performance, while other personality dimensions are unrelated or inconsistently related to academic performance (O'Connor & Paunonen, 2007). This finding supports the idea that, in academe, conscientious students are on average more successful than less conscientious students and that personality traits such as self-discipline, punctuality, and perseverance are important for academic success. Until now, no field studies have been conducted to test a possible association between the personality trait Honesty–Humility and academic performance. Nevertheless, meta-analyses have indicated that Integrity is one of the best predictors of work performance (Ones, Viswesvaran, & Schmidt, 1993; Schmidt & Hunter, 1998). In addition, Integrity has been found to explain variance in work performance over and above the variance explained by cognitive ability and has even been found to explain more incremental variance in work performance than Conscientiousness does (Schmidt & Hunter, 1998). Several studies have found that Integrity and Honesty–Humility are comparable constructs (Lee, Ashton, & De Vries, 2005; Marcus, Lee, & Ashton, 2007)[1], which may suggest that Honesty–Humility is a predictor of work performance as well. Based on these findings, it may be expected that Honesty–Humility will also be a relevant predictor of performance in academic settings.

Previous studies have mostly focused on the relation between personality and GPA as an academic criterion. Another academic criterion, CAB, includes behaviours such as cheating, substance abuse, and plagiarism. With respect to counterproductive behaviours in work contexts, previous studies have reported negative relations between Conscientiousness and antisocial work criteria such as alcohol consumption (Hong, Paunonen, & Slade, 2008; Paunonen, 2003), destructive behavioural responses to frustrating work situations (Reisert & Conte, 2004), and employee absence (Conte & Jacobs, 2003). Among the Big Five dimensions, Conscientiousness not only seems to be the best (negative) predictor of overall counterproductive work behaviour (Fallon, Avis, Kudisch, Gornet, & Frost, 2000; Salgado, 2002), but also of counterproductive behaviour in an academic context (Marcus et al., 2007). This last finding may be explained by the fact that conscientious students are organized, hard working, precise, and persistent—characteristics which appear to make counterproductive behaviours superfluous. Besides Conscientiousness, Honesty–Humility (comparable to Integrity) seems to be especially important in the prediction of counterproductive behaviours at work (Ashton & Lee, 2008; Lee, Ashton, & De Vries, 2005; Lee, Ashton, & Shin, 2005; Marcus, Wagner, Poole, Powell, & Carswell, 2009) and at school (Marcus et al., 2007). An explanation for this last finding may be that students who score high on Honesty–Humility are unwilling to take advantage of others and therefore avoid CAB. In line with the abovementioned findings, we expect the following:

> *Hypothesis 1*: Conscientiousness and Honesty–Humility are positively related to academic performance and negatively related to counterproductive academic behaviour.

Narrow personality traits and academic criteria

Personality research has recently begun to focus on more specific, so-called narrow personality traits in order to improve the prediction of important work and academic criteria. The choice between broad, heterogeneous traits and narrow, homogeneous traits, has become known as the 'bandwidth-fidelity' dilemma (Cronbach & Gleser, 1965; Ones & Viswesvaran, 1996). Cronbach and Gleser (1965) have hypothesized that broad traits with high bandwidth, such as captured by the Big Five or HEXACO personality dimensions, may offer low fidelity. In contrast, narrow traits with low bandwidth, such as the facets of the Big Five or HEXACO dimensions, may offer high fidelity. Ones and Viswesvaran (1996) have argued that broad traits may be better predictors of broad criteria such as work performance, because broad traits have higher predictive validity as well as more explanatory power. However, even in the case of predicting broad and complex behaviours, narrow traits have been found to explain more variance than broad traits, suggesting that, overall, narrow traits have higher predictive

[1]Note that these studies assessed overt Integrity, which differs from Honesty–Humility; overt integrity tests are not personality-based and are mostly developed to assess the predisposition of job applicants to exhibit counterproductive behaviour (e.g. Berry, Sackett, & Wiemann, 2007). Despite the different operationalization of overt Integrity and Honesty–Humility, several studies have provided evidence that Honesty–Humility is strongly associated with overt Integrity (Lee, Ashton, & De Vries, 2005; Marcus et al., 2007). Therefore, the terms Honesty-Humility and Integrity will be used interchangeably from this point onwards.

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validities (Ashton, 1998; Paunonen & Ashton, 2001a; Paunonen, Rothstein, & Jackson, 1999). Some scholars have reasoned that a broad trait may have a lower level of predictive validity than the best predictor among the narrow traits when the strong predictive validity of one specific narrow trait is diluted by the weaker or absent predictive validities of the other narrow traits belonging to the same broad trait (Paunonen & Ashton, 2001a; Paunonen et al., 1999). Furthermore, Schneider, Hough, and Dunnette (1996) have pointed out that the wide range of broad traits often makes it difficult to conceptually understand the relations between personality and performance, suggesting that narrow traits have more explanatory strength. It therefore has been argued that in order to maximize predictive validity and to offer clarity about the relations between personality and performance, relevant narrow traits are to be preferred as predictors of performance criteria (e.g. Paunonen & Ashton, 2001a; Schneider et al., 1996).

In educational settings, some studies have indeed paid attention to the predictive power of narrow personality traits (e.g. Chamorro-Premuzic & Furnham, 2003b; Duckworth & Seligman, 2005; Noftle & Robins, 2007; Paunonen & Ashton, 2001b). When predicting GPA, the narrow traits Achievement Striving, Self-discipline, and Diligence have been found to be the strongest predictive facets of Conscientiousness, whereas its narrow trait Order has been found to be unrelated to GPA (Chamorro-Premuzic & Furnham, 2003b; Duckworth & Seligman, 2005; Noftle & Robins, 2007). In fact, in a longitudinal study among adolescent students, Duckworth and Seligman (2005) showed that, compared to cognitive ability, the narrow facet Self-discipline accounted for more than twice the amount of variance in several academic criteria such as final grades and school attendance. Although we are unacquainted with any similar publication relating narrow traits of Honesty–Humility to academic criteria, it may be expected that some but not all narrow traits of Honesty–Humility will be relevant to academic contexts. Accordingly, in the current study we will investigate which facets of Honesty–Humility are the strongest predictors of academic criteria. Furthermore, in line with scholars who have argued that narrow facets may improve the prediction of performance criteria, we hypothesize:

> *Hypothesis 2*: Narrow traits of Conscientiousness and Honesty–Humility are more strongly related to academic performance and counterproductive academic behaviour than are the broad traits Conscientiousness and Honesty–Humility.

The present study

Our study is divided in two separate studies, using different personality questionnaires and different samples. In both studies, we will first examine whether Conscientiousness and Honesty–Humility are positively related to academic performance and negatively related to CAB (Hypothesis 1). Secondly, in both studies we will investigate whether the narrow traits of Conscientiousness and Honesty–Humility are more strongly related to academic performance and CAB than the broad traits Conscientiousness and Honesty–Humility themselves (Hypothesis 2).

STUDY 1

Method

Participants and procedure

In the second semester of an academic year, we sent an e-mail to 800 undergraduate students from several academic disciplines such as 'Communication and Multimedia Design' and 'Teacher Training' at a large School for Higher Education in The Netherlands. Students were asked to fill out the following two questionnaires on a voluntary basis: The HEXACO Personality Inventory Revised (HEXACO-PI-R; Ashton & Lee, 2008) and the Inventory of Counterproductive Behaviour (ICB; Hakstian, Farrell, & Tweed, 2002). As a reward for participation, we raffled an iPod, book coupons, and coupons for extreme sports. Four months later, at the end of the academic year, we acquired participants' GPA from the School's official records. In total, 237 students filled out both questionnaires. Three participants had missing values and four provided invalid answers (e.g. long rows of the same answer). The data from these participants were removed. Finally, four participants completed the questionnaires twice; we removed the data of the second time they had filled out the questionnaires. The questionnaires and GPA of the remaining 226 students ($M_{age} = 20.5$, $SD = 2.8$, 78.3% female) were matched using the students' ID numbers.

Measures

HEXACO-PI-R. The HEXACO-PI-R (Ashton & Lee, 2008) was used to measure the six HEXACO personality dimensions: Honesty–Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Each personality domain scale consists of four facets. HEXACO-PI-R Conscientiousness consists of the facets Organization, Diligence, Perfectionism, and Prudence, and HEXACO-PI-R Honesty–Humility consists of the facets Sincerity, Fairness, Greed Avoidance, and Modesty. We used the Dutch version of HEXACO-PI-R (De Vries, Ashton, & Lee, 2009), which contains 200 self-descriptive statements (for item examples, see Ashton & Lee, 2009). Responses were assessed with a 5-point Likert response scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In line with prior research (De Vries, Ashton, et al., 2009), the present study showed that the psychometric properties of the Dutch HEXACO-PI-R domain scales were adequate, with α reliabilities ranging from $\alpha = .87$ for Agreeableness to $\alpha = .92$ for Honesty–Humility (see Table 1).

ICB counterproductive academic behaviour. CAB was assessed using the ICB (Hakstian et al., 2002), which measures self-report counterproductive behaviours. The ICB contains 40 statements which are distributed over nine underlying scales, such as 'Property Theft' and 'Low Personal Standards'. In line with Marcus et al. (2007), we only used the 25 academically related items measuring

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Table 1. Correlations, α reliabilities and descriptives of Study 1 variables ($N = 226$)

	1	2	3	4	5	6	7	8	9	10
1 Gender	—									
2 Age	−.13	—								
3 HEX: H	.35	−.04	**.92**							
4 HEX: E	.53	−.18	.27	**.88**						
5 HEX: X	−.06	.05	.04	−.18	**.89**					
6 HEX: A	−.04	−.10	.35	−.05	.03	**.87**				
7 HEX: C	.21	.03	.21	.16	.08	.12	**.88**			
8 HEX: O	−.24	.07	−.18	−.13	.17	−.06	−.07	**.89**		
9 GPA	.16	−.01	.23	.10	.04	.03	.32	.04	—	
10 CAB	−.13	−.06	−.40	−.08	−.03	−.19	−.42	.03	−.26	**.88**
M	1.78	20.45	3.61	3.24	3.59	3.08	3.33	3.19	6.79	2.70
SD	0.41	2.81	0.54	0.46	0.45	0.42	0.45	0.50	0.53	0.83

Notes: α reliabilities are on the diagonal; correlations with absolute values exceeding .12 are significant at $p < .05$ and with absolute values exceeding .17 are significant at $p < .01$; for gender 1 = male, 2 = female; HEXACO-PI-R (HEX) scales are Honesty–Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O); GPA = grade point average; CAB = counterproductive academic behaviour; scale metrics for CAB range from 1 *(never even considered it)* to 6 (*did it three of more times)*.

behaviours like cheating, substance abuse, and plagiarism. An example of an item is: *'Submitted a class paper or project that was not your own work'*. In addition to these 25 items, Marcus et al. used one extra item (*'did slow or sloppy work'*) which we did not consider as specifically academically related. For this reason, we excluded this item. Having removed all non-academic items, the remaining number of items was insufficient to compose reliable subscales. Therefore, in line with Marcus et al., CAB was measured as one construct. Regarding the instructions, respondents had to consider the behaviour described in the statement and indicate how frequently they had shown this behaviour in the last five school years, using the following scale: *1. Never even considered it; 2. Considered it, but did not do it; 3. Did it, perhaps once, but not sure; 4. Did it once; 5. Did it twice and 6. Did it three or more times.* The items and instructions of the original ICB were in English. Subsequently, one of the authors translated the items into Dutch. A scholar fluent in English and Dutch back-translated the items into English. There were no important discrepancies between the original and the back-translated items. In the present study, the α reliability of the 25 academic related items was $\alpha = .88$ (see Table 1), which is comparable to previous studies (Hakstian et al., 2002).

GPA. GPA consisted of a unit-weighted average of all exam marks, based on oral as well as written exams, received during one academic year. GPA was obtained from official records and ranged from 1 to 10 with higher scores indicating higher GPA.

Results

Correlational analyses

Observed correlations, α reliabilities, and descriptive statistics of the background variables, the HEXACO-PI-R domain scales, GPA, and the CAB scale are reported in Table 1. First of all, the results indicate that female students scored higher on Conscientiousness ($r = .21$, $p < .01$) and Honesty–Humility ($r = .35$, $p < .01$) than male students. Female students also had higher grades ($r = .16$, $p < .05$) and showed less CAB ($r = -.13$, $p < .05$). Because of the relation of gender with the main variables in our study and the high proportion of female students (78.3%), we decided to control for gender in the remainder of the analyses. Furthermore, Table 1 shows that Conscientiousness ($r = .32$, $p < .01$) and Honesty–Humility ($r = .23$, $p < .01$) were significantly and positively related to GPA, whereas other personality scales showed no significant relations with GPA. To further investigate the significant relations, we examined the relations between the various facets of Conscientiousness and Honesty–Humility on the one hand, and GPA on the other. Table 2 reports the observed correlations and the partial correlations corrected for gender. With respect to the observed correlations, all facets of Conscientiousness showed significant and positive relations with GPA. Of the Conscientiousness facets, Diligence ($r = .29$, $p < .01$)

Table 2. Reliabilities (bold-faced) of the Conscientiousness and Honesty-Humility facets and correlations with GPA and CAB in Study 1 ($N = 226$)

HEXACO-PI-R	α reliabilities	GPA	CAB
Conscientiousness			
Organization	**.82**	.19** (.16*)	−.33** (−.31**)
Diligence	**.76**	.29** (.27**)	−.40** (−.39**)
Perfectionism	**.77**	.28** (.26**)	−.21** (−.19**)
Prudence	**.70**	.21** (.20**)	−.30** (−.30**)
Honesty–Humility			
Sincerity	**.71**	.12 (.09)	−.35** (−.33**)
Fairness	**.80**	.15* (.11)	−.53** (−.52**)
Greed Avoidance	**.87**	.23** (.20**)	−.26** (−.24**)
Modesty	**.84**	.22** (.18**)	−.18** (−.14*)

Notes: Values in parentheses are partial correlations, corrected for gender; GPA = grade point average; CAB = counterproductive academic behaviour.
*$p < .05$; **$p < .01$.

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and Perfectionism ($r = .28, p < .01$) displayed the strongest relations with GPA. Similarly, all facets of Honesty–Humility, except Sincerity, correlated significantly and positively with GPA. Among these facets, Greed Avoidance ($r = .23, p < .01$) and Modesty ($r = .22, p < .01$) were the strongest correlates. With respect to CAB, Conscientiousness ($r = -.42, p < .01$) and Honesty–Humility ($r = -.40, p < .01$) were significantly and negatively associated with CAB and revealed, in comparison with the other personality scales, the strongest relations with CAB. Table 2 shows that all Conscientiousness and Honesty–Humility facets correlated significantly and negatively with CAB. The strongest correlates were the Conscientiousness facet Diligence ($r = -.40, p < .01$) and the Honesty–Humility facet Fairness ($r = -.53, p < .01$). Note that abovementioned correlations between personality facets and academic criteria somewhat declined when corrected for gender; however most correlations remained significant. Finally, there was a modest significant negative relation between GPA and CAB ($r = -.26, p < .01$), indicating that GPA and CAB, although related, are sufficiently distinguishable criteria for the purposes of this study. This finding is in line with recent work that indicated a modest negative relation between GPA and counterproductive work behaviour (Marcus et al., 2009).

Regression analyses

To examine our first hypothesis, i.e. whether Conscientiousness and Honesty–Humility were positively related to academic performance and negatively related to CAB, two hierarchical regression analyses were conducted; one with GPA as dependent variable and one with CAB as dependent variable. First, GPA or CAB was regressed on the control variable gender (step 1). Subsequently, we entered the HEXACO domain scales (step 2) with the exception of Conscientiousness and Honesty–Humility which we entered in the following step (step 3). The final β coefficients, R^2, and R^2 changes associated with the three steps are reported in Table 3. Consistent with the observed correlations, Conscientiousness emerged as the best predictor of GPA ($\beta = .28, p < .01$), followed by

Table 3. Results of the hierarchical regression and relative weight analyses in Study 1 ($N = 226$)

	GPA				CAB			
HEXACO-PI-R domains	Final β's	*rw*	R^2	ΔR^2	Final β's	*rw*	R^2	ΔR^2
Step 1			.03*				.02	
Gender	.07	8.1%			.03	2.2%		
Step 2			.04*	.01			.06*	.04
Emotionality	−.02	1.9%			.06	0.9%		
Extraversion	.00	0.5%			.03	0.1%		
Agreeableness	−.06	1.3%			−.02	5.5%		
Openness	.10	4.1%			−.05	0.4%		
Step 3			.14**	.10**			.29**	.23**
Conscientiousness	.28**	58.6%			−.36**	50.2%		
Honesty–Humility	.19*	25.5%			−.36**	40.7%		

	GPA				CAB			
HEXACO-PI-R domains and facets	Final β's	*rw*	R^2	ΔR^2	Final β's	*rw*	R^2	ΔR^2
Step 1			.03*				.02	
Gender	.06	4.1%			.03	1.0%		
Step 2			.04*	.01			.06*	.04
Emotionality	−.01	1.0%			.08	0.8%		
Extraversion	.04	0.8%			.12*	0.9%		
Agreeableness	−.09	1.4%			.00	2.3%		
Openness	.09	2.9%			−.05	0.4%		
Step 3			.20**	.17**			.41**	.35**
Conscientiousness								
Organization	.07	7.2%			−.16*	11.7%		
Diligence	.18*	19.4%			−.26**	18.5%		
Perfectionism	.12	16.5%			.14*	2.6%		
Prudence	.13	10.7%			−.10	7.3%		
Honesty–Humility								
Sincerity	−.14	2.2%			−.06	9.5%		
Fairness	−.11	2.5%			−.47**	36.8%		
Greed Avoidance	.25**	17.3%			−.02	5.9%		
Modesty	.19*	14.0%			.07	2.2%		

Notes: GPA = grade point average; CAB = counterproductive academic behaviour.
*$p < .05$; **$p < .01$.

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Honesty–Humility ($\beta = .19$, $p < .05$). Conscientiousness and Honesty–Humility were the only significant predictors of GPA and added significant incremental variance to the prediction of GPA when entered together with the other HEXACO scales ($\Delta R^2 = .10$, $p < .01$). To further explore the contribution of the personality variables in the prediction of academic criteria, we employed the comparatively new method of relative weight analysis (Johnson, 2000). In contrast with the hierarchical regression analysis, this method of analysis determines the relative importance of each predictor to the criterion by considering the unique contribution of each predictor plus the contribution of each predictor in combination with other the predictors (for information on how the relative weights are estimated, see Johnson, 2000; LeBreton & Tonidandel, 2008). Table 3 provides the results of the relative weight analysis where *rw* stands for the relative contribution to R^2 of each personality domain or facet in predicting GPA and CAB. Conscientiousness ($rw = 58.6\%$) and Honesty–Humility ($rw = 25.5\%$) together accounted for 84.1% of the total variance in GPA explained by personality.

With respect to CAB, Conscientiousness ($\beta = -.36$, $p < .01$) and Honesty–Humility ($\beta = -.36$, $p < .01$) were again the only significant predictors among the HEXACO-PI-R scales. Both domain scales added significant incremental variance to the prediction of CAB ($\Delta R^2 = .23$, $p < .01$) and contributed 90.9% to the variance in CAB explained by personality. Again, Conscientiousness ($rw = 50.2\%$) and Honesty–Humility ($rw = 40.7\%$) explained almost all of the total variance in CAB explained by personality.

Our second hypothesis stated that the narrow traits of Conscientiousness and Honesty–Humility are more strongly related to academic performance and CAB than the broad traits themselves. In order to test this hypothesis, we examined the variance in GPA and CAB explained by the facets and compared this with the variance explained by the domains Conscientiousness and Honesty–Humility. To this end, one hierarchical regression analysis was conducted with GPA as dependent variable and one with CAB as dependent variable. Again, GPA or CAB was regressed on the control variable gender (step 1), after which the HEXACO domain scales were entered with the exception of Conscientiousness and Honesty–Humility (step 2). At last, the facets of Conscientiousness and Honesty–Humility were entered (step 3). As Table 3 shows, the Conscientiousness facet Diligence ($\beta = .18$, $p < .05$), and Honesty–Humility facets Greed Avoidance ($\beta = .25$, $p < .01$) and Modesty ($\beta = .19$, $p < .05$) were significant predictors of GPA. When entered in combination with the other HEXACO scales, the facets of Conscientiousness and Honesty–Humility together added significant incremental variance to the prediction of GPA ($\Delta R^2 = .17$, $p < .01$). Note that while the domain scales Conscientiousness and Honesty–Humility explained 10% of the variance in GPA, the facets explained a higher percentage, namely 17%. Subsequently, in order to determine whether the facets were significantly more strongly related to GPA than the domain scales, we used an *F*-test. There indeed was evidence that the narrow traits were more strongly related to GPA than the broad traits were (F (6, 212) = 2.7, $p < .05$).

With respect to CAB, Diligence ($\beta = -.26$, $p < .01$), Organization ($\beta = -.16$, $p < .05$), and Fairness ($\beta = -.47$, $p < .01$) emerged as the strongest predictors. When taken together, the facets of Conscientiousness and Honesty–Humility added significant incremental variance to the prediction of CAB ($\Delta R^2 = .35$, $p < .01$), accounting for 35% of the variance. This percentage compares favourably to the 23% explained by the domain scales Conscientiousness and Honesty–Humility. An *F*-test confirmed that the facets were significantly more strongly related to CAB than the domain scales were (F (6, 212) = 7.1, $p < .01$).

To sum up, the results show that Conscientiousness and Honesty–Humility were significantly related to GPA and CAB at the domain as well as facet level, thus confirming our first hypothesis. Moreover, in line with our second hypothesis, the narrow facets of Conscientiousness and Honesty–Humility were more strongly related to GPA and CAB than the broader domains Conscientiousness and Honesty–Humility.

Discussion

This first study has yielded four important results. First of all, Conscientiousness was, at the domain as well as at the facet level, a significant and positive predictor of academic performance. This finding confirms the results of several recent studies (e.g. Chamorro-Premuzic & Furnham, 2003a, b; Conard, 2006; Noftle & Robins, 2007; Richardson & Abraham, 2009) and therefore supports the idea that conscientious students have certain characteristics, such as being organized and capable of hard work, that allow them to perform well in an academic context.

Second, although prior studies have concluded that the addition of Honesty–Humility in the HEXACO model seems to be valuable in explaining incremental variance in important criteria, no prior study has examined the incremental value of Honesty–Humility and its facets in the prediction of *academic* criteria. As far as we know, our study is the first to show that Honesty–Humility is an important (positive) predictor of academic performance, namely the second most important after Conscientiousness. Among the facets of Honesty–Humility, Greed Avoidance and Modesty were the most important predictors of academic performance. These findings suggest that students who are reserved, unassuming, and uninterested in possessing luxury goods or a high social status will be more successful academically.

Third, while most studies have employed GPA as the only academic criterion measured, the present study included CAB as a second criterion. Results showed that Conscientiousness and Honesty–Humility were, at the domain and facet level, significantly and negatively related to CAB. Of all the facets, Fairness and Diligence were found to be the best predictors of CAB, suggesting that students who do not take advantage of other individuals, avoid fraud and corruption, and have strong 'work ethics' (Lee & Ashton, 2004) will show less counterproductive behaviour in an

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academic setting than students low on Fairness and Diligence.

Fourth, the facets of Conscientiousness and Honesty–Humility explained significantly more variance in academic performance and CAB than did the domain scales Conscientiousness and Honesty–Humility. This indicates that assessing narrow traits relevant to the criterion may improve the prediction of academic criteria. In order to replicate this and abovementioned findings, we conducted a second study in which we extended the number of participants and used another personality questionnaire based on the six-dimensional personality model: The Multicultural Personality Test—Big Six (NOA, 2009).

STUDY 2

Method

Participants and procedure

In Study 2, two partly overlapping datasets were used. The first dataset consisted of personality and GPA data (sample 1). The second dataset consisted of personality and CAB data (sample 2). The first sample was obtained as part of a student mentoring and study skills enhancement project at a School for Higher Education in The Netherlands, in which all students who participated in the program completed several questionnaires at the beginning of their study. The participants' responses to the Multicultural Personality Test—Big Six (MPT-BS; NOA, 2009) were used as a starting point in the current study. The test was completed by more than 1500 students from a wide array of academic disciplines, such as 'Teacher Training', 'Asian Trade Management' and 'Informatics'. Participants with invalid answers (e.g. long rows of the same answer) were removed. As a result, the sample was reduced to 1262 students ($M_{age} = 19.9$, $SD = 3.7$, 70.9% female). After 1 year, we acquired participants' GPA from official records of the School. Answers on the questionnaires and GPA were matched using the students' ID numbers.

The second dataset (sample 2) consisted of personality and CAB data, and was obtained at two separate points in time. During the second semester of an academic year, we first asked students who had completed the MPT-BS at the beginning of that academic year, 7 months before, to voluntarily fill out the ICB (i.e. self-reported CAB; Hakstian et al., 2002). Note that we did not ask every participant from sample 1 ($N = 1262$) to voluntarily complete the ICB, but only participants from those academic disciplines that had agreed to send an e-mail to their students. Of the 400 students who received an e-mail message, 118 completed the ICB. In the second semester of the next academic year, we invited 300 students of the School, who had completed the MPT-BS at the beginning of their study in the same academic year, to voluntarily fill out the ICB. Again, we only invited students from academic disciplines that had given permission to approach their students. Of these, 65 students completed the ICB through the Internet. The final sample therefore consisted of 183 students ($M_{age} = 19.2$, $SD = 2.8$, 79.8% female) who filled out both the MPT-BS and the ICB. As a reward for participation, we raffled book coupons and coupons for extreme sports. Answers on the MPT-BS and ICB were matched using the students' ID numbers.

Finally, in order to determine whether there were any differences in personality traits between sample 1 (personality and GPA data) and sample 2 (personality and CAB data), we conducted t tests. The results indicated that students who participated in sample 2 scored significantly higher on Conscientiousness ($t = -3.61$, $d = -.29$, $p < .01$) than students who only participated in sample 1. This may have been a result of the fact that the students who took part in sample 2 were asked to fill out the ICB voluntarily, since it seems reasonable that more conscientious students are generally more likely to co-operate of their own free will.

Measures

MPT-BS. The MPT-BS (NOA, 2009) consists of 200 short and easy-to-understand self-descriptive statements and measures six personality scales based on the six main lexical personality dimensions (Ashton & Lee, 2007; Ashton et al., 2004; Lee & Ashton, 2008): Emotional Stability, Conscientiousness, Extraversion, Agreeableness, Openness, and Integrity.[2] Since in the MPT-BS the sixth personality dimension is labelled Integrity (instead of Honesty–Humility), we will refer to it as Integrity in the present study. Each personality domain scale contains three to five facets. MPT-BS Conscientiousness consists of the facets Need for Rules and Certainty, Orderliness, Perseverance, and Achievement Motivation, and MPT-BS Integrity consists of the facets Honesty, Sincerity, and Greed Avoidance. Participants completed the MPT-BS in Dutch. The responses were assessed with a 5-point Likert response scale from 1 (*strongly disagree*) to 5 (*strongly agree*). In line with previous research (NOA, 2009), the present study indicated adequate α reliabilities ranging from $\alpha = .81$ for Integrity to $\alpha = .91$ for Emotional Stability (see Table 4).

We conducted a preliminary study to investigate the convergent validity of the MPT-BS (NOA, 2009).[3] Results of this preliminary study indicated strong convergent relations for the MPT-BS domain scales Emotional Stability, Conscientiousness, Extraversion, Agreeableness, and Integrity with the corresponding personality scales from the NEO Personality Inventory—Revised (NEO-PI-R; Costa & McCrae, 1992) and the HEXACO-PI-R (Ashton & Lee, 2008; De Vries, Ashton, et al., 2009).

ICB counterproductive academic behaviour. CAB was assessed using the Dutch version of 25 academic related items of the ICB (Hakstian et al., 2002) (see Study 1).

[2]Although the dimensions of the MPT-BS are based on the six-dimensional personality model, MPT-BS Emotional Stability and Agreeableness correspond more closely to the similarly named Big Five dimensions than to the HEXACO Emotionality and Agreeableness dimensions.

[2]Results from this preliminary study can be obtained from the first author.

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Table 4. Correlations, α reliabilities and descriptives of Study 2 variables

	1	2	3	4	5	6	7	8	9	10
1 Gender	—									
2 Age	−.06	—								
3 MPT-BS: ES	−.18	.12	**.91**							
4 MPT-BS: C	.27	.14	.24	**.90**						
5 MPT-BS: E	−.12	.03	.36	.12	**.88**					
6 MPT-BS: A	.19	.05	.34	.32	.30	**.88**				
7 MPT-BS: O	−.09	.14	.41	.26	.54	.40	**.87**			
8 MPT-BS: I	.27	.13	.30	.34	−.06	.38	.14	**.81**		
9 GPA	.25	.09	−.11	.27	−.08	.09	−.04	.19	—	
10 CAB	−.14	−.05	−.14	−.44	.06	−.18	−.06	−.27	—	**.89**
M	1.71	19.86	3.62	3.58	3.51	3.87	3.48	3.50	6.49	2.72
SD	0.45	3.71	0.40	0.41	0.43	0.30	0.33	0.37	0.82	0.85

Notes: $N = 1262$, except for correlations with CAB ($N = 183$); α reliabilities are on the diagonal; α reliabilities and descriptives of background variables and personality variables are based on $N = 1262$; for $N = 1262$, correlations with absolute values exceeding .05 are significant at $p < .05$ and with absolute values exceeding .08 are significant at $p < .01$; for $N = 183$, correlations with absolute values exceeding .16 are significant at $p < .05$ and with absolute values exceeding .18 are significant at $p < .01$; for gender 1 = male, 2 = female; MPT-BS scales are Emotional Stability (ES), Conscientiousness (C), Extraversion (E), Agreeableness (A), Openness (O), and Integrity (I); GPA = grade point average; CAB = counterproductive academic behaviour; scale metrics for CAB range from 1 *(never even considered it)* to 6 (*did it three of more times).*

GPA. GPA consisted of a unit-weighted average of all exam marks, based on oral as well as written exams, received during one academic year. GPA was obtained from official records and ranged from 1 to 10 with higher scores indicating higher GPA.

Results

Correlational analyses

Observed correlations, α reliabilities, and descriptive statistics of the background variables, the MPT-BS domain scales, GPA, and the CAB scale are reported in Table 4. Similar to the findings in Study 1, Table 4 reveals that female students scored higher on Conscientiousness ($r = .27$, $p < .01$) and Integrity ($r = .27, p < .01$) than male students. Female students also scored higher in GPA ($r = .25$, $p < .01$) and lower in CAB ($r = -.14$, $p < .01$). The results also indicate that Conscientiousness ($r = .27$, $p < .01$) and Integrity ($r = .19$, $p < .01$) were the most important personality correlates of GPA. To further specify the results, Table 5 indicates that all facets of Conscientiousness and Integrity showed significant and positive relations with GPA (see the values in parentheses for partial correlations corrected for gender). Among the facets, the most important correlates of GPA were the Conscientiousness facets Need for Rules and Certainty ($r = .27, p < .01$) and Orderliness ($r = .23, p < .01$), followed by the Integrity facet Greed Avoidance ($r = .22, p < .01$). Additionally, and also in line with Study 1, the personality domains Conscientiousness ($r = -.44$, $p < .01$) and Integrity ($r = -.27$, $p < .01$) were significantly and negatively related to CAB, as were all of their associated facets, with the exception of Sincerity. The strongest correlations with CAB were observed for the Conscientiousness facets Need for Rules and Certainty ($r = -.39, p < .01$) and Orderliness ($r = -.40$, $p < .01$), and for the Integrity facet Honesty ($r = -.30$, $p < .01$).

Regression analyses

We first investigated whether Conscientiousness and Integrity were positively related to academic performance and negatively related to CAB (Hypothesis 1). To this end, the same hierarchical regression analyses were conducted as in Study 1. Table 6 shows that Conscientiousness ($\beta = .24$,

Table 5. Reliabilities (bold-faced) of the Conscientiousness and Integrity facets and correlations with GPA and CAB in Study 2

MPT-BS	α reliabilities	GPA ($N = 1262$)	CAB ($N = 183$)
Conscientiousness			
Need for Rules and Certainty	**.79**	$.27^{**}$ ($.21^{**}$)	$-.39^{**}$ ($-.37^{**}$)
Orderliness	**.83**	$.23^{**}$ ($.18^{**}$)	$-.40^{**}$ ($-.38^{**}$)
Perseverance	**.78**	$.13^{**}$ ($.09^{**}$)	$-.34^{**}$ ($-.33$)
Achievement Motivation	**.71**	$.20^{**}$ ($.18^{**}$)	$-.25^{**}$ ($-.26^{**}$)
Integrity			
Honesty	**.61**	$.12^{**}$ ($.08^{**}$)	$-.30^{**}$ ($-.30^{**}$)
Sincerity	**.68**	$.06^{*}$ ($.00$)	$-.13$ ($-.12$)
Greed Avoidance	**.81**	$.22^{**}$ ($.17^{**}$)	$-.18^{*}$ ($-.16^{*}$)

Notes: α reliabilities are based on the dataset which consisted of personality and GPA data ($N = 1262$); values in parentheses are partial correlations, corrected for gender; GPA = grade point average; CAB = counterproductive academic behaviour.
$^{*}p < .05$; $^{**}p < .01$.

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Table 6. Results of the hierarchical regression and relative weight analyses in Study 2

	GPA ($N = 1262$)				CAB ($N = 183$)			
MPT-BS domains	Final β's	*rw*	R^2	ΔR^2	Final β's	*rw*	R^2	ΔR^2
Step 1			.06**				.02	
Gender	.11**	22.5%			−.04	3.9%		
Step 2			.08**	.02**			.08*	.06*
Emotional stability	−.17**	13.0%			−.04	4.1%		
Extraversion	−.02	2.1%			.13	3.7%		
Agreeableness	.03	3.4%			.02	4.3%		
Openness	−.03	2.3%			−.05	1.5%		
Step 3			.14**	.06**			.24**	.16**
Conscientiousness	.24**	41.1%			−.40**	66.4%		
Integrity	.12**	15.7%			−.15*	16.2%		

	GPA ($N = 1262$)				CAB ($N = 183$)			
MPT-BS domains and facets	Final β's	*rw*	R^2	ΔR^2	Final β's	*rw*	R^2	ΔR^2
Step 1			.06**				.02	
Gender	.12**	15.8%			−.05	2.9%		
Step 2			.08**	.02**			.08*	.06*
Emotional stability	−.12**	7.3%			−.08	3.1%		
Extraversion	.02	1.5%			.08	2.4%		
Agreeableness	.03	1.7%			.06	1.8%		
Openness	−.05	2.2%			−.07	1.4%		
Step 3			.18**	.10**			.25**	.17**
Conscientiousness								
Need for Rules and Certainty	.12**	15.7%			−.21*	25.2%		
Orderliness	.11**	12.0%			−.17	22.2%		
Perseverance	−.05	2.5%			−.05	11.3%		
Achievement Motivation	.18**	15.5%			−.07	8.1%		
Integrity								
Honesty	−.02	1.7%			−.11	11.1%		
Sincerity	−.04	1.0%			.04	1.2%		
Greed Avoidance	.22**	22.8%			−.16	9.4%		

Notes: GPA = grade point average; CAB = counterproductive academic behaviour.
*$p < .05$; **$p < .01$.

$p < .01$), and Integrity ($\beta = .12$, $p < .01$) were both significant and positive predictors of GPA, explaining significant incremental variance ($\Delta R^2 = .06$, $p < .01$) when entered together with the other personality domain scales. It is worth noting that, besides Conscientiousness and Integrity, Emotional Stability was significantly but *negatively* associated with GPA ($\beta = -.17$, $p < .01$); we will provide a possible explanation of this negative influence of MPT-BS Emotional Stability on GPA in the discussion section. With respect to CAB, Conscientiousness ($\beta = -.40$, $p < .01$) and Integrity ($\beta = -.15$, $p < .05$) emerged as the only predictors among the domain scales and together explained 16% incremental variance ($\Delta R^2 = .16$, $p < .01$).

In addition, we examined whether the narrow traits of Conscientiousness and Integrity were more strongly related to academic performance and CAB than the broad traits Conscientiousness and Integrity (Hypothesis 2). Again, we conducted the same hierarchical regression analyses as in Study 1. With respect to GPA, the most predictive facets were the Conscientiousness facets Need for Rules and Certainty ($\beta = .12$, $p < .01$), Achievement Motivation ($\beta = .18$, $p < .01$) and the Integrity facet Greed Avoidance ($\beta = .22$, $p < .01$). The Conscientiousness and Integrity facets were able to explain a higher percentage of variance than the broad domains, namely 10% ($\Delta R^2 = .10$, $p < .01$) versus 6%. The relative weight analysis shows that the facets ($rw = 71.2\%$) also explained a higher percentage of the total variance than the broad traits ($rw = 56.8\%$). An F-test confirmed that the domains were significantly less strongly related to GPA than the facets were (F (5, 1249) = 10.9, $p < .01$). These findings are in line with Study 1 and underscore our earlier finding that narrow facets explain more variance in academic performance than broad domains. Regarding CAB, the only facet with a significant relation to this criterion was Need for Rules and Certainty ($\beta = -.21$, $p < .05$). When taken together, the facets nevertheless offered significant incremental validity in the prediction of CAB above the variance explained by the other personality scales ($\Delta R^2 = .17$, $p < .01$). However, the narrow facets were not able to explain significantly more variance in CAB than the broad traits Conscientiousness and Integrity (F (5, 170) = .73, *ns*).

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Discussion

By and large, this second study replicated the findings of Study 1. Again, Conscientiousness and Integrity (cf. Honesty–Humility) were, at the domain as well as facet level, significant predictors of academic performance and CAB. In addition, the narrow facets of Conscientiousness and Integrity again explained more variance in academic performance than the broad domains. However, in contrast with Study 1, the facets were not found to contribute significant incremental validity to the prediction of CAB over and above the variance explained by the broad traits. This limitation may be due to the fact that in Study 2 Integrity (measured by the MPT-BS) did not include a facet defined by fairness, whereas in Study 1 the facet Fairness (measured by the HEXACO-PI-R) was the strongest correlate of CAB.

Another notable difference with Study 1 was the significant and negative relation between Emotional Stability (measured by the MPT-BS) and academic performance. Interestingly, some previous studies reported *positive* relations between Emotional Stability and academic performance (e.g. Chamorro-Premuzic & Furnham, 2003b), while a recent meta-analysis found Emotional Stability to be *unrelated* to academic performance (O'Connor & Paunonen, 2007). In the present study, a complementary analysis indicated that among the facets of Emotional Stability, Self-confidence showed the strongest negative relation with GPA. Hence, abovementioned contrasting findings can be explained by the fact that previous studies mostly measured personality by the NEO-PI-R (Costa & McCrae, 1992) and NEO-PI-R Emotional Stability does not consist of a Self-confidence facet. Self-confidence as measured by the MPT-BS is defined as having confidence in oneself and believing one will succeed in many areas, without any help from others. Consequently, this facet appears to measure over-confidence or self-enhancement: An overoptimistic belief in one's own abilities and a tendency to overlook or disregard one's limitations and failures. Interestingly, research has shown a negative relation between self-enhancement and cognitive ability (Paunonen & Hong, 2010). Furthermore, other studies demonstrated that students who overestimated their performance, did not grasp their own shortcomings, and in fact received lower grades (Kennedy, Lawton, & Plumlee, 2002; Robins & Beer, 2001).

GENERAL DISCUSSION

This present research has addressed the possibility of improving the prediction of two academic criteria (academic performance and CAB) by focusing on the personality traits Conscientiousness and Honesty–Humility/Integrity. Two separate studies, using different personality questionnaires and different samples, support our first hypothesis that Conscientiousness and Honesty–Humility/Integrity are positively related to academic performance and negatively related to CAB. Furthermore, our findings confirm the second hypothesis that the narrow traits of Conscientiousness and Honesty–Humility/Integrity are more strongly related to academic criteria than are the broad traits themselves.

Honesty–Humility and academic criteria

Our study is, as far as we know, the first to show that Honesty–Humility is the second-best predictor of academic performance, after Conscientiousness. Furthermore, besides Conscientiousness, Honesty–Humility seems to be important in the prediction of CAB. Some scholars may argue that the predictive validity of Honesty–Humility may be regarded as unsurprising in light of its relation with Big Five Agreeableness. However, sufficient evidence has been gathered to show that Honesty–Humility does not overlap with Big Five Agreeableness (Ashton & Lee, 2005). It should be noted that Honesty–Humility does overlap with FFM (NEO-PI-R) Agreeableness. FFM Agreeableness contains two facets (associated with sincerity and modesty) that are not strongly related to Big Five Agreeableness, but which have been shifted to Honesty–Humility in the HEXACO model. Nevertheless, a substantial amount of evidence suggests that Honesty–Humility still adds valuable incremental validity to the prediction of important criteria over and above FFM personality measurement (Ashton & Lee, 2008).

Some scholars may put the idea forward that Honesty–Humility and Conscientiousness are almost indistinguishable. However, this line of thought may be based on a misinterpretation of previous findings due to the differentiation between overt and personality-based integrity tests. In overt integrity tests participants are asked to openly describe their attitudes towards, and the frequency and amount of, wrongdoings such as theft, illegal activities, and counterproductive behaviours. In covert personality-based integrity tests respondents are asked about personality traits, such as trustworthiness and sociability which have been found to be associated with counterproductive behaviours (Sackett, Burris, & Callahan, 1989). The Big Five dimensions Conscientiousness, Agreeableness, and Extraversion have frequently been found to correlate with covert personality based Integrity (e.g. Schmidt & Hunter, 1998). In contrast, Lee et al. (Lee, Ashton, & De Vries, 2005) have found that Honesty–Humility was less related to covert personality based Integrity, but strongly associated with overt Integrity. Furthermore, studies have found considerable support for the fact that Conscientiousness and Honesty–Humility within the six-dimensional personality model are independent, separate personality dimensions (i.e. $r < .16$), while HEXACO Conscientiousness has been found to be almost indistinguishable from Big Five Conscientiousness (i.e. $r = .82$, see e.g. De Vries, De Vries, De Hoogh, et al., 2009). Abovementioned findings suggest that there is not much evidence for strong conceptual overlap between Conscientiousness and Honesty–Humility.

Broad versus narrow traits

Although some scholars have argued that broad traits may be better predictors of broad criteria (Ones & Viswesvaran, 1996), the current study indicates that even in the case of predicting broad (academic performance) or complex (CAB)

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criteria, the narrow traits of Conscientiousness and Honest–Humility/Integrity explain more variance than the broad traits. We believe that the focus on narrow traits in the prediction of academic criteria has a number of advantages. First and foremost, as narrow traits explain more variance, important criteria may be predicted with greater accuracy by narrow traits rather than by broad traits. Second, the summation of narrow facet scales to obtain a broad domain scale may inadvertently mask relations between narrow traits and academic criteria. This will occur when, for example, one narrow trait is positively related to a specific criterion, while another narrow trait belonging to the same broad trait is negatively related to this criterion. Third, narrow traits offer greater fidelity, which makes it easier to conceptually understand and interpret the relations between personality and criteria. For example, the present study identifies that narrow personality traits such as Diligence, Achievement Motivation, Need for Rules and Certainty, Greed Avoidance, and Modesty are the personality traits most strongly associated with academic performance. Interpretation of these relations indicates that students who work hard, set goals, have a preference for structure, are modest, and are uninterested in having a high social status, are academically more successful. Furthermore, little is known yet about personality factors relevant for the prediction of CABs such as showing up late for class and plagiarism on assignments. However, with regard to the predictive narrow traits, interpretation of our findings seems to suggest that students who do not want to take advantage of other people, who are not willing to exert themselves, and who do not want to live according to certain rules, will show relatively more counterproductive behaviours.

As the addition of Honesty–Humility/Integrity as a predictor of academic performance seems to be a novel contribution to the empirical literature, the theoretical issue at stake here is why it is plausible to expect Honesty–Humility/Integrity to positively predict academic performance. Focusing on the most predictive narrow traits of Honesty–Humility/Integrity shows that both in Study 1 (were personality was measured using the HEXACO-PI-R) and in Study 2 (were personality was measured using the MPT-BS), Greed Avoidance was found to display the strongest relation with academic performance. One possible explanation for this finding is that students who score low on Greed Avoidance may find it important to live in relative luxury and avoid the relative poverty of students' lives. As a result, they may prefer to have a job, additional to school, in order to be able to afford luxury goods. Therefore, these students may be spending less time studying and doing homework, in the end resulting in lower academic performance. This last line of thought is supported by recent research showing a significant, negative relation between students' time spent on a job and academic performance (Butler, 2007). Additionally, besides wealth, students low on Greed Avoidance also consider power and social status to be very important. It may be that one of their most important goals in life is to have a high social status. As a result, those students may be spending more time taking care of their social reputation, for example among friends at school, than that they are spending time studying. Indeed, extracurricular social temptations have been found to hamper study performance (Schouwenburg & Groenewoud, 2001).

Limitations

A possible limitation of our study is that, except for GPA, the instruments used were self-report questionnaires, and that participants may have completed these questionnaires in a socially desirable manner. In Study 1, participants completed the HEXACO-PI-R on a voluntary basis, while participants in Study 2 filled out the MPT-BS as part of a student mentoring and study skills enhancement project. In both studies, the scores were not used to make important decisions, such as selection decisions. Thus, participants had no apparent reason to complete the personality questionnaires in a socially desirable manner. It is probably more likely that the questionnaire which measured counterproductive behaviour has been subject to a social desirability bias, because participants had to indicate how frequently they had shown undesirable behaviours such as cheating and plagiarism. Ones, Viswesvaran, and Reiss (1996) examined the effects of social desirability on the relations between personality and several criteria, such as work performance and counterproductive work behaviour. They concluded that social desirability does not influence criterion-related validities of personality scales in general and integrity scales in particular. Future studies might like to obtain external measurements, for instance official records of counterproductive behaviours such as ratings of absence to counteract the effects of response styles. However, external measurements may provide an incomplete picture because not every counterproductive behaviour can be registered, while self-report measurements are able to take into account a broader range of counterproductive behaviours (Ones et al., 1993). An alternative might be to obtain other-rated reports of counterproductive behaviour from closely related study peers. Closely related study peers may be in a unique position to provide relatively accurate ratings of a broad range of CABs that are less susceptible to self-serving response biases.

Practical implications

Knowledge of which narrow traits are relevant in academic settings may be used as a tool in the process of offering students information about potential causes of academic success and failure. Practically, personality tests may be included in students mentoring and study skills enhancement projects in which students may receive feedback on their personality. Personality feedback may provide several benefits. First, if students are unaware of their strengths, the notion of their potencies may strengthen the degree of confidence they have about following academic education. Second, giving students feedback on their personality may also result in awareness of potential weaknesses. In academic skills enhancement projects, such awareness is usually the first necessary step in overcoming these potential weaknesses. Third, if students score low on important narrow

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personality traits and support is needed, this information may be used to discuss which actions need to be taken. For example, students low on Conscientiousness may be advised to take extra classes to learn how to plan, set study-related goals, and develop a structured approach to study tasks. Furthermore, students low on Honesty–Humility/Integrity, in particular low on Greed Avoidance, could be shown that considering wealth and status as important can result in poorer academic performance. It is important that those students consider the amount of time they expect to spend on their study and reflect on their main goals and motives for following education.

With respect to CAB, research has indicated that students who show dishonest behaviours at school are more likely to display future dishonesty at the workplace (Nonis & Swift, 2001). As counterproductive behaviours in work settings violates organizational norms and threatens the well being of the organization and its members (Robinson & Bennett, 1995), dishonesty should be discouraged as early as possible. Nonis and Swift (2001) suggest that it is important to increase students' awareness and understanding of what is unethical behaviour, and offer some techniques for encouraging ethical behaviour among students such as specific ethics classes to learn ethical decision-making. For students low on Conscientiousness and Honesty–Humility/Integrity such techniques may be helpful to reduce counterproductive behaviours.

CONCLUSION

The purpose of the present study was to improve the prediction of academic criteria by personality measures. The results suggest that apart from Conscientiousness, Honesty–Humility/Integrity is an important positive predictor of academic performance. The current study also shows that relevant narrow traits of Conscientiousness and Honesty–Humility/Integrity offer higher predictive validities of important academic criteria than the broad traits themselves. Knowledge of which narrow traits are relevant in academic settings may play a significant role in offering information about causes of academic success and failure, and may be of key importance for the mentoring of students.

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REFERENCES

Ashton, M. C. (1998). Personality and job performance: The importance of narrow traits. *Journal of Organizational Behavior*, *19*, 289–303.

Ashton, M. C., & Lee, K. (2005). Honesty-Humility, the Big Five, and the Five-Factor Model. *Journal of Personality*, *73*, 1321–1353.

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, *11*, 150–166.

Ashton, M. C., & Lee, K. (2008). The prediction of Honesty-Humility-related criteria by the HEXACO and Five-Factor Models of personality. *Journal of Research in Personality*, *42*, 1216–1228.

Ashton, M. C., & Lee, K. (2009). The HEXACO-60: A short measure of the major dimensions of personality. *Journal of Personality Assessment*, *91*, 340–345.

Ashton, M. C., Lee, K., Perugini, M., Szarota, P., De Vries, R. E., Di Blas, L., et al. (2004). A six-factor structure of personality-descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology*, *86*, 356–366.

Berry, C. M., Sackett, P. R., & Wiemann, S. A. (2007). A review of recent developments in integrity test research. *Personnel Psychology*, *60*, 271–301.

Butler, A. B. (2007). Job characteristics and college performance and attitudes: A model of work-school conflict and facilitation. *Journal of Applied Psychology*, *92*, 500–510.

Chamorro-Premuzic, T., & Furnham, A. (2003a). Personality predicts academic performance: Evidence from two longitudinal university samples. *Journal of Research in Personality*, *37*, 319–338.

Chamorro-Premuzic, T., & Furnham, A. (2003b). Personality traits and academic examination performance. *European Journal of Personality*, *17*, 237–250.

Conard, M. A. (2006). Aptitude is not enough: How personality and behavior predict academic performance. *Journal of Research in Personality*, *40*, 339–346.

Conte, J. M., & Jacobs, R. R. (2003). Validity evidence linking polychronicity and Big Five personality dimensions to absence, lateness, and supervisory performance ratings. *Human Performance*, *16*, 107–129.

Costa, P. T., & McCrae, R. R. (1992). *NEO Personality Inventory—Revised (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

Cronbach, L. J., & Gleser, C. C. (1965). *Psychological tests and personnel decisions* (2nd ed.). Urbana: University of Illinois Press.

De Vries, R. E., Ashton, M. C., & Lee, K. (2009). De zes belangrijkste persoonlijkheidsdimensies en de HEXACO Persoonlijkheidsvragenlijst [The six most important personality dimensions and the HEXACO Personality Inventory]. *Gedrag & Organisatie*, *22*, 232–274.

De Vries, R. E., De Vries, A., De Hoogh, A., & Feij, J. (2009). More than the Big Five: Egoism and the HEXACO model of personality. *European Journal of Personality*, *23*, 635–654.

De Vries, R. E., De Vries, A., & Feij, J. A. (2009). Sensation seeking, risk-taking, and the HEXACO model of personality. *Personality and Individual Differences*, *47*, 536–540.

Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, *16*, 939–944.

Fallon, J. D., Avis, J. M., Kudisch, J. D., Gornet, T. P., & Frost, A. (2000). Conscientiousness as a predictor of productive and counterproductive behaviors. *Journal of Business and Psychology*, *15*, 339–349.

Furnham, A., & Chamorro-Premuzic, T. (2004). Personality and intelligence as predictors of statistics examination grades. *Personality and Individual Differences*, *37*, 943–955.

Furnham, A., & Monsen, J. (2009). Personality traits and intelligence predict academic school grades. *Learning and Individual Differences*, *19*, 28–33.

Goff, M., & Ackerman, P. L. (1992). Personality-intelligence relations: Assessment of typical intellectual engagement. *Journal of Educational Psychology*, *84*, 537–552.

Hakstian, A. R., Farrell, S., & Tweed, R. G. (2002). The assessment of counterproductive tendencies by means of the California Psychological Inventory. *International Journal of Selection and Assessment*, *10*, 58–86.

Hong, R. Y., Paunonen, S. V., & Slade, H. P. (2008). Big Five personality factors and the prediction of behavior: A multitrait-multimethod approach. *Personality and Individual Differences*, *45*, 160–166.

Johnson, J. W. (2000). A heuristic method for estimating the relative weight of predictor variables in multiple regression. *Multivariate Behavioral Research*, *35*, 1–19.

Kennedy, E. J., Lawton, L., & Plumlee, E. L. (2002). Blissful ignorance: The problem of unrecognized incompetence and academic performance. *Journal of Marketing Education*, *24*, 243–252.

LeBreton, J. M., & Tonidandel, S. (2008). Multivariate relative importance: Extending relative weight analysis to multivariate criterion spaces. *Journal of Applied Psychology*, *93*, 329–345.

Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO Personality Inventory. *Multivariate Behavioral Research*, *39*, 329–358.

Lee, K., & Ashton, M. C. (2008). The HEXACO personality factors in the indigenous personality lexicons of English and 11 other languages. *Journal of Personality*, *76*, 1001–1053.

Lee, K., Ashton, M. C., & De Vries, R. E. (2005). Predicting workplace delinquency and integrity with the HEXACO and Five-Factor models of personality structure. *Human Performance*, *18*, 179–197.

Lee, K., Ashton, M. C., & Shin, K. H. (2005). Personality correlates of workplace anti-social behavior. *Applied Psychology: An International Review*, *54*, 81–98.

Lee, K., Ogunfowora, B., & Ashton, M. C. (2005). Personality traits beyond the Big Five: Are they within the HEXACO space? *Journal of Personality*, *73*, 1437–1463.

Marcus, B., Lee, K., & Ashton, M. C. (2007). Personality dimensions explaining relationships between integrity tests and counterproductive behavior: Big Five, or one in addition? *Personnel Psychology*, *60*, 1–34.

Marcus, B., Wagner, U., Poole, A., Powell, D. M., & Carswell, J. (2009). The relationship of GMA to counterproductive work behavior revisited. *European Journal of Personality*, *23*, 489–507.

NOA. (2009). *Handleiding Multiculturele Persoonlijkheids Test - Big Six [Manual Multicultural Personality Test - Big Six]*. Amsterdam: NOA BV.

Noftle, E. E., & Robins, R. W. (2007). Personality predictors of academic outcomes: Big Five correlates of GPA and SAT scores. *Journal of Personality and Social Psychology*, *93*, 116–130.

Nonis, S., & Swift, C. O. (2001). An examination of the relationship between academic dishonesty and workplace dishonesty: A multicampus Investigation. *Journal of Education for Business*, *77*, 69–77.

O'Connor, M. C., & Paunonen, S. V. (2007). Big Five personality predictors of post-secondary academic performance. *Personality and Individual Differences*, *43*, 971–990.

Ones, D. S., & Viswesvaran, C. (1996). Bandwidth-fidelity dilemma in personality measurement for personnel selection. *Journal of Organizational Behavior*, *17*, 609–626.

Ones, D. S., Viswesvaran, C., & Reiss, A. D. (1996). Role of social desirability in personality testing for personnel selection: The red herring. *Journal of Applied Psychology*, *81*, 660–679.

Ones, D. S., Viswesvaran, C., & Schmidt, F. L. (1993). Comprehensive meta-analysis of integrity test validities: Findings and implications for personnel selection and theories of job performance. *Journal of Applied Psychology*, *78*, 679–703.

Paunonen, S. V. (2003). Big Five factors of personality and replicated predictions of behavior. *Journal of Personality and Social Psychology*, *84*, 411–424.

Paunonen, S. V., & Ashton, M. C. (2001a). Big Five factors and facets and the prediction of behavior. *Journal of Personality and Social Psychology*, *81*, 524–539.

Paunonen, S. V., & Ashton, M. C. (2001b). Big Five predictors of academic achievement. *Journal of Research in Personality*, *35*, 78–90.

Paunonen, S. V., & Hong, R. Y. (2010). Self-efficacy and the prediction of domain-specific cognitive abilities. *Journal of Personality*, *78*, 339–360.

Paunonen, S. V., Rothstein, M. G., & Jackson, D. N. (1999). Narrow reasoning about the use of broad personality measures for personnel selection. *Journal of Organizational Behavior*, *20*, 389–405.

Poropat, A. E. (2009). A meta-analysis of the Five-Factor Model of personality and academic performance. *Psychological Bulletin*, *135*, 322–338.

Reisert, E., & Conte, J. M. (2004). Relationships between Conscientiousness sub-factors and constructive and destructive behavioral intentions. *Journal of Business and Psychology*, *19*, 69–84.

Richardson, M., & Abraham, C. (2009). Conscientiousness and achievement motivation predict performance. *European Journal of Personality*, *23*, 589–605.

Robins, R. W., & Beer, J. S. (2001). Positive illusions about the self: Short-term benefits and long-term costs. *Journal of Personality and Social Psychology*, *80*, 340–352.

Robinson, S. L., & Bennett, R. J. (1995). A typology of deviant workplace behaviors: A multidimensional scaling study. *Academy of Management Journal*, *38*, 555–572.

Sackett, P. R., Burris, L. R., & Callahan, C. (1989). Integrity testing for personnel selection: An update. *Personnel Psychology*, *42*, 491–529.

Salgado, J. F. (2002). The Big Five personality dimensions and counterproductive behaviors. *International Journal of Selection and Assessment*, *10*, 117–125.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, *124*, 262–274.

Schneider, R. J., Hough, L. A., & Dunnette, M. D. (1996). Broadsided by broad traits: How to sink science in five dimensions or less. *Journal of Organizational Behavior*, *17*, 639–655.

Schouwenburg, H. C., & Groenewoud, J. T. (2001). Study motivation under social temptation; effects of trait procrastination. *Personality and Individual Differences*, *30*, 229–240.

Ziegler, M., Danay, E., Schölmerich, F., & Bühner, M. (2010). Predicting academic success with the Big 5 rated from different points of view: Self-rated, other rated and faked. *European Journal of Personality*, *24*, 1–15.

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